



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/783,035	02/15/2001	Katsuhide Manabe	PM 276665	6867
21254	7590	04/04/2005	F99-156-USDIV	
MCGINN & GIBB, PLLC 8321 OLD COURTHOUSE ROAD SUITE 200 VIENNA, VA 22182-3817			EXAMINER NGUYEN, THANH T	
			ART UNIT 2813	PAPER NUMBER

DATE MAILED: 04/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

CA

Office Action Summary	Application No. 09/783,035	Applicant(s) MANABE ET AL.	
	Examiner Thanh T. Nguyen	Art Unit 2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/31/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18, 19 and 22-26 is/are pending in the application.
4a) Of the above claim(s) 18 and 19 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-24 is/are allowed.
- 6) ☒ Claim(s) 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Request for Continued Examination

The request filed on 1/31/05 for a Request for Continued Examination (RCE) under 37 CFR 1.114 is acceptable and an RCE has been established. An action on the RCE follows.

This Office Action is in response to the amendment filed on 1/31/05.

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/31/05 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 2813

Claim 26 is rejected under 35 U.S.C. 102(b) as being anticipated by Nakamura et al. (U.S. Patent No. 5,578,839).

Referring to figures 1-10, Nakamura et al. teaches a method for producing a light-emitting semiconductor device of a group III nitride compound, comprising:

Forming an N-layer of an N-type conduction (16, see figure 1, col. 5, lines 14-24), the N-layer comprising gallium nitride (16, It will be Gallium nitride when $y=1$),

Forming an emission layer of group III nitride compound semiconductor (18, see fig. 1, col. 5, lines 7-13) satisfying the formula, $Al_{x1}Ga_{y1}In_{1-x1-y1}N$, where $0 \leq x1 \leq 1$, $0 \leq y1 \leq 1$, $0 \leq x1+y1 \leq 1$, on the N-layer (18), Noted that when $x1=0$ then the formula will be $Ga_{y1}In_{1-y1}N$ which will be the same as formula of layer 18.

Forming a P-layer of P-type conduction (20, see col. 5, lines 25-32), on the emission layer (18), said p-layer comprising aluminum gallium nitride satisfying the formula $Al_{x2}Ga_{1-x2}N$, where $0 \leq x2 \leq 1$. Noted that when $x2=0.5$ then the formula will be $Al_{0.5}Ga_{0.5}N$ which will be the same as formula of layer 20.

Forming a contact layer of P-type conduction (34), on the P-layer, the contact layer comprising gallium nitride (see claim 19, col. 11, lines 44-47).

Doping Si into the N-layer and Mg into the P-layer (see col. 10, lines 38-67), so that a potential barrier of a valence band of the N-layer is lower than a potential barrier of a conduction band of the P-layer during conduction. It is held, absent evidence to the contrary that doping the N-type and P-type of dopant into the layer would facilitate the potential barrier of a valence band of the N-layer is lower than a potential barrier of a conduction band of the P-layer during

Art Unit: 2813

conduction. See In re Best, 195 USPQ 428 (CCPA 1977) and In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

Response to Arguments

Applicant's arguments filed 1/31/05 have been fully considered but they are not persuasive.

Applicant contends that Nakamura doesn't disclose a contact layer made of p-GaN. In response to applicant that Nakamura clearly teaches a contact layer made of p-GaN (34, see claim 19, col. 11, lines 44-47).

Allowable Subject Matter

Claims 22-24 are allowed. Because none of the prior art alone or in combination teaches or suggests the particular subset of the process steps in forming a hole and groove extending from the contact layer to the N-layer, forming a first electrode on a top surface of the contact layer, and forming a second electrode on an upper exposed surface of the N-layer in the hole.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Nguyen whose telephone number is (571) 272-1695, or by

Art Unit: 2813

Email via address Thanh.Nguyen@uspto.gov. The examiner can normally be reached on Monday-Thursday from 6:00AM to 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr., can be reached on (571) 272-1702. The fax phone number for this Group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956 (See **MPEP 203.08**).

A handwritten signature in black ink, appearing to read 'Thanh', with a stylized flourish extending to the right.

Thanh Nguyen
Patent Examiner
Patent Examining Group 2800

TTN